

## California Mathematics Standards Tests

<b>General Mathematics (Pre-Algebra) Grades 8 and 9</b>	
<b>California Content Standards</b>	<b>Number and Percent of Items</b>
<b>Number Sense</b>	<b>24 (37% of test)</b>
7.1.1 Read, write, and compare rational numbers in scientific notation (positive and negative powers of 10) with approximate numbers using scientific notation.	1
7.1.2 Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.	4
7.1.3 Convert fractions to decimals and percents and use these representations in estimations, computations, and applications	4
7.1.5 Know that every rational number is either a terminating or repeating decimal and be able to convert terminating decimals into reduced fractions.	2
7.1.6 Calculate the percentage of increases and decreases of a quantity.	1
7.1.7 Solve problems that involve discounts, markups, commissions, and profit and compute simple and compound interest.	2
7.2.1 Understand negative whole-number exponents. Multiply and divide expressions involving exponents with a common base.	1
7.2.2 Add and subtract fractions by using factoring to find common denominators.	4
7.2.3 Multiply, divide, and simplify rational numbers by using exponent rules.	2
7.2.4 Use the inverse relationship between raising to a power and extracting the root of a perfect square integer; for an integer that is not square, determine without a calculator the two integers between which its square root lies and explain why.	1
7.2.5 Understand the meaning of the absolute value of a number; interpret the absolute value as the distance of the number from zero on a number line; and determine the absolute value of real numbers.	2

California Content Standards	Number and Percent of Items
<b>Algebra and Functions</b>	<b>21 (32% of test)</b>
7.1.1 Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).	3
7.1.2 Use the correct order of operations to evaluate algebraic expressions such as $3(2x + 5)^2$ .	3
7.1.3 Simplify numerical expressions by applying properties of rational numbers (e.g., identity, inverse, distributive, associative, commutative) and justify the process used.	2
7.1.5 Represent quantitative relationships graphically and interpret the meaning of a specific part of a graph in the situation represented by the graph.	1
7.2.1 Interpret positive whole-number powers as repeated multiplication and negative whole-number powers as repeated division or multiplication by the multiplicative inverse. Simplify and evaluate expressions that include exponents.	1
7.2.2 Multiply and divide monomials; extend the process of taking powers and extracting roots to monomials when the latter results in a monomial with an integer exponent.	1
7.3.1 Graph functions of the form $y = nx^2$ and $y = nx^3$ and use in solving problems.	1
7.3.3 Graph linear functions, noting that the vertical change (change in y-value) per unit of horizontal change (change in x-value) is always the same and know that the ratio ("rise over run") is called the slope of a graph.	2
7.3.4 Plot the values of quantities whose ratios are always the same (e.g., cost to the number of an item, feet to inches, circumference to diameter of a circle). Fit a line to the plot and understand that the slope of the line equals the quantities.	1
7.4.1 Solve two-step linear equations and inequalities in one variable over the rational numbers, interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results.	4
7.4.2 Solve multistep problems involving rate, average speed, distance, and time or a direct variation.	2

California Content Standards	Number and Percent of Items
<b>Measurement and Geometry</b>	<b>11 (17% of test)</b>
7.1.1 Compare weights, capacities, geometric measures, times, and temperatures within and between measurement systems (e.g., miles per hour and feet per second, cubic inches to cubic centimeters).	1
7.1.2 Construct and read drawings and models made to scale.	1
7.1.3 Use measures expressed as rates (e.g., speed, density) and measures expressed as products (e.g., person-days) to solve problems, check the units of the solutions; and use dimensional analysis to check the reasonableness of the answer.	2
7.2.1 Use formulas routinely for finding the perimeter and area of basic two-dimensional figures and the surface area and volume of basic three-dimensional figures, including rectangles, parallelograms, trapezoids, squares, triangles, circles, prisms, and cylinders.	1
7.2.2 Estimate and compute the area of more complex or of irregular two- and three-dimensional figures by breaking the figures down into more basic geometric objects.	1
7.2.3 Compute the length of the perimeter, the surface area of the faces, and the volume of a three-dimensional object built from rectangular solids. Understand that when the lengths of all dimensions are multiplied by a scale factor, the surface area is multiplied by the square of the scale factor and the volume is multiplied by the cube of the scale factor.	$\frac{1}{2}$ (1 out of either 7.2.3 or 7.2.4)
7.2.4 Relate the changes in measurement with a change of scale to the units used (e.g., square inches, cubic feet) and to conversions between units (1 square foot = 144 square inches or $[1 \text{ ft}^2] = [144 \text{ in}^2]$ , 1 cubic inch is approximately 16.38 cubic centimeters or $[1 \text{ in}^3] = [16.38 \text{ cm}^3]$ ).	$\frac{1}{2}$ (1 out of either 7.2.3 or 7.2.4)
7.3.2 Understand and use coordinate graphs to plot simple figures, determine lengths and areas related to them, and determine their image under translations and reflections.	1
7.3.3 Know and understand the Pythagorean theorem and its converse and use it to find the length of the missing side of a right triangle and lengths of other line segments and, in some situations, empirically verify the Pythagorean theorem by direct measurement.	3

<b>California Content Standards</b>		<b>Number and Percent of Items</b>
<b>Statistics, Data Analysis, and Probability</b>		<b>9 (14% of test)</b>
6.1.1	Compute the range, mean, median, and mode of data sets.	1
6.2.5	Identify claims based on statistical data and, in simple cases, evaluate the validity of the claims.	1
6.3.1	Represent all possible outcomes for compound events in an organized way (e.g., tables, grids, tree diagrams) and express the theoretical probability of each outcome.	1
6.3.3	Represent probabilities as ratios, proportions, decimals between 0 and 1, and percentages between 0 and 100 and verify that the probabilities computed are reasonable; know that if P is the probability of an event, 1-P is the probability of an event not occurring.	1
6.3.5	Understand the difference between independent and dependent events.	1
7.1.1	Know various forms of display for data sets, including a stem-and-leaf plot or box-and-whisker plot; use the forms to display a single set of data or to compare two sets of data.	1
7.1.2	Represent two numerical variables on a scatterplot and informally describe how the data points are distributed and any apparent relationship that exists between the two variables (e.g., between time spent on homework and grade level).	1
7.1.3	Understand the meaning of, and be able to compute, the minimum, the lower quartile, the median, the upper quartile, and the maximum of a data set.	2

California Content Standards	Number and Percent of Items
<b>Mathematical Reasoning</b>	
7.1.1 Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.	Embedded
7.1.2 Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed.	Embedded
7.2.1 Use estimation to verify the reasonableness of calculated results.	Embedded
7.2.3 Estimate unknown quantities graphically and solve for them by using logical reasoning and arithmetic and algebraic techniques.	Embedded
7.2.4 Make and test conjectures by using both inductive and deductive reasoning.	Embedded
7.3.1 Evaluate the reasonableness of the solutions in the context of the original situation.	Embedded
7.3.3 Develop generalizations of the results obtained and the strategies used and apply them to new problem solutions.	Embedded
<b>General Mathematics Total</b>	<b>65/100%</b>